

EVIDENCE

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Mobile Forensics in Court

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New Jersey agency invests in **Advanced Video Forensics**

THE UBIQUITY of video has offered a number of investigative possibilities to law enforcement professionals—but that boost has not arrived without a number of challenges. Officials in Union County, N.J., have embraced those challenges by adopting new technology and workflows to realize the biggest benefits from this now-critical form of evidence.

The Union County Prosecutor's Office utilizes 71 detectives and a similarly sized legal staff in order to offer prosecutorial and investigative

The Union County Prosecutor's Office positioned itself to handle the volume and variety of video evidence that the future promises to bring.

Written by Dale Garrison

services, both internally as well as to 24 jurisdictions in the county.

"Technology is a force multiplier," explained John McCabe, acting chief of investigators for the Union County Prosecutor's Office. "It gives us greater ability to do our jobs."

McCabe noted that with video evidence available nearly everywhere, it potentially plays a role in the majority of criminal cases today. Increasingly, law enforcement agencies must be prepared to develop their own forensic video analysis units, incorporate

Acting Chief of Investigators John McCabe and Sergeant Michael Hoose interact with the new forensic video lab at the Union County Prosecutor's Office.



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proven workflows, and ensure that personnel are trained to properly collect, analyze, and present video evidence in the field, in the lab, and in court.

In the courtroom, it becomes clear that having appropriate resources to efficiently handle video evidence offers more than an investigative edge. Prosecutors must also consider the well-known *CSI* effect, where juries arrive with television-influenced, preconceived notions that if a video camera was rolling nearby during a crime, video will therefore be presented as evidence in court.

“Technology is a powerful resource at a trial,” McCabe added. “Juries have come to expect that kind of thing. If you don’t have it, they wonder what’s wrong.”

Technology to the Rescue

Members of the agency’s High Tech Unit have pursued technical advances for more than 13 years. They have been highly aggressive, using the latest tools for everything from battling child pornography to recent collaboration for DNA analysis. Now the agency is well on its way to completing development of its own high-tech forensic video analysis unit.

This chapter began less than two years ago when Union County investigators attended the Digital Video Recovery Class at the Federal Law Enforcement Training Center. Students there utilize technology such as a portable digital video capture tool, the Omnivore from Ocean Systems, on actual cases—learning first-hand how such equipment can save time and produce highly useful results. When they returned, their information and additional research led the agency to invest in Ocean Systems’ full Forensic Video Lab, along with a RAID-protected storage system and four Omnivore field kits.

Video capture with the field kits is usually where collection of this evidence begins. “There are video cameras everywhere now,” McCabe added. “And when it’s available, it’s a powerful source at a trial.”

It is estimated that video evidence is involved in approximately 80 percent of crimes. That staggering abundance of video brings some other



The prosecutor's office's High Tech Unit recently invested in a turnkey video, image, and audio capture, processing, analysis, and clarification CPU workstation with 36 terabytes of protected video data storage, specialized forensic software, and four proprietary field capture kits that can capture an “uncompressed” copy of video and images from practically any type of digital video recorder (DVR) or other computer.

“There are video cameras everywhere now. And when it’s available, it’s a powerful source at a trial.”

—Chief John McCabe

complications—namely, the wide variety of video formats, each with its own proprietary characteristics and requirements. To be used, the files must be converted into a standard format that can be read and cataloged, then exported in a compressed format that will fit on a DVD for a courtroom. In the “bad old days,” that could translate into hours of work to parse formats, including some that required technical wizardry just to split different methods of encoding by different manufacturers.

“We needed a way to get video from

just about every location imaginable,” explained Sergeant Michael Hoose, supervisor of the High Tech Unit. “In the beginning, you spent a lot of time figuring out what system it was. Now, there’s rarely a case where we don’t get what we need.”

Union County’s four field kits can export instant video copies in file formats that can be played by anyone without needing proprietary equipment. These represent huge advantages for real-world use. The agency still retains the downloadable, native video files so they retain the original evidence, should it be needed.

Union County’s new equipment also features an advanced video-editing platform and software plug-ins that allow technicians to visually focus and clarify an image. For example, they can filter and highlight a specific suspect or victim, magnify or enlarge objects such as an individual or a vehicle, and examine image areas down to individual pixels. There is even a module to remove “noise” such as darkness, rain, and snow. And, with the original video separated, the investigative tools leave the primary evidence untouched.

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Union County chose its new system because of those advantages, as well as a highly comprehensive format. "It's a real turnkey solution," McCabe said. "It's really comprehensive."

As an administrator, McCabe also appreciates how the new system saves time, freeing investigators and legal staff for other efforts. "It saves on investigative man-hours. Originally, our investigators would go out then come back and have to download

software to extract video. This gives them all the tools right there."

Old Fashioned Legwork

Even with the technology, good detective skills remain important. Hoose noted that investigators still visually examine each scene, determining, among other things, what video is available, what it might offer, and how accessible it might be. Although video is often available for a majority

of modern crime scenes, there are several questions that help prioritize their next steps.

When arriving at a crime scene, one of the first things investigators now do is canvas the area for private, government, or other video feeds. If a possible video source is located, a member of the high-tech team will be sent to extract the data, often examining it on the scene. Chief McCabe noted that one thing he likes about the county's new system is "that turnkey aspect. It will handle just about anything you run up against from that one system," he said. "That can be a real advantage."

These advantages are important for other reasons. One of the main uses for video evidence at the prosecutor's office is for investigating and prosecuting homicide cases. "We are the primary investigative agency in the county for homicides," McCabe added. "We'll handle a lot of data, and this allows us to work with about any system out there. It allows you to take the video and, when you're done, you can have a compressed file that you can load onto a DVD and take to court."

Finding that a surveillance camera may have captured a crime on video is only the first step. The next step is collecting that evidence—and in that case, the elapsed time between the incident and the collection of video is critical.

"Retention periods are now key," Hoose explained. "If someone reports something and they say they have it on their video system but it was a month ago, it may not be there by the time they call. Depending on the system, it may have been overwritten."

The type of video system affects that timetable. High-definition systems often have much shorter retention periods because the increased video data takes up more space, meaning rewrites may occur much more frequently. Although there are steps that can sometimes work around such obstacles, they are part of the new range of questions investigators must deal with.

Another hurdle may be the cost of investment in this technology. In addition to the capital outlay, training is required—but Union County views training as a benefit that outweighs

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its own cost. To maximize the impact of these new capabilities, the prosecutor's office plans to have several of its investigators certified by the Law Enforcement and Emergency Services Video Association (LEVA). This certification would move the agency's investigators to an elite level worldwide, where only approximately 50 people now hold that distinction. It would also allow them to defend their work in a courtroom with maximum credibility.

Only the Beginning

Union County officials agree that the development and evolution of forensic video evidence will not end any time soon. Although it is difficult to imagine a larger proliferation of video cameras than at present, many note that the United States is well behind nations like England, which have had highly monitored public areas for years. Even in the United States, trends such as a soon-to-be-released watch phone or other "wearables" such as Google Glass, growing use of

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red-light cameras or private security cameras, all mean that video and photo recording will continue to increase. And as that happens, more crime scenes will offer invaluable evidence in the form of recorded images.

McCabe noted that early pioneers, including some in Union County, often battled doubts about the benefits of high-tech equipment. Today, the issues are more about implementation and priorities. "Years ago, it was a hard sell," he concluded. "People like Mike (Hoose) had to do a lot of work. But today, it's growing, and we can't ignore it. Video is a critical piece of evidence to the prosecution or to vindicate the accused. Technology can be invaluable when you can get it. Now, this type of investigation is becoming commonplace."

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